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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,377	09/24/2003	Mustafa Michael Pinarbasi	HIT1P025/HSJ9-2003-0084US	1860
50535	7590	03/21/2005	EXAMINER	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			WATKO, JULIE ANNE	
			ART UNIT	PAPER NUMBER
			2653	
DATE MAILED: 03/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/671,377

Applicant(s)

PINARBASI, MUSTAFA MICHAEL

Examiner

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/24/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/24/2003</u> . | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION*****Drawings***

1. Figures 1A-6 and 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa et al (US PAP No. 2003/0030434 A1).

As recited in claim 1, Hasegawa et al show a magnetic head (see ¶ 0259,

"alumina(1000)/underlayer: Ta(32)/seed layer: (Ni<sub>0.8</sub>Fe<sub>0.2</sub>)<sub>60at%</sub>Cr<sub>40at%</sub>/antiferromagnetic layer:

Pt<sub>50at%</sub>Mn<sub>50at%</sub>(200)/pinned magnetic layer: [Co<sub>90at%</sub>Fe<sub>10at%</sub>(15)/Ru(9)/Co<sub>90at%</sub>Fe<sub>10at%</sub>(22)]

/nonmagnetic layer: Cu(21)/free magnetic layer: [Co<sub>90at%</sub>Fe<sub>10at%</sub>(10)/Ni<sub>80at%</sub>Fe<sub>20at%</sub>(32)]"),

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comprising: a seed layer structure comprising  $\text{Al}_2\text{O}_3$ , Ta, and NiFeCr seed layers (“alumina(1000)/underlayer: Ta(32)/seed layer:  $(\text{Ni}_{0.8}\text{Fe}_{0.2})_{60\text{at}\%}\text{Cr}_{40\text{at}\%}$ ”); an antiparallel (AP) pinned layer structure (“pinned magnetic layer”) formed above the NiFeCr seed layer; and a free layer (“free magnetic layer”) positioned above the AP pinned layer structure.

As recited in claim 2, Hasegawa et al show that the AP pinned layer structure includes at least two pinned layers having magnetic moments that are self-pinned antiparallel (see ¶ 0028, “RKKY mutual exchange coupling generated between magnetic layers having a laminated ferrimagnetic structure”) to each other, the pinned layers being separated by an AP coupling layer (“ $[\text{Co}_{90\text{at}\%}\text{Fe}_{10\text{at}\%}(15)/\text{Ru}(9)/\text{Co}_{90\text{at}\%}\text{Fe}_{10\text{at}\%}(22)]$ ”, see ¶ 0259).

As recited in claim 3, Hasegawa et al show that the AP pinned layers are constructed of CoFe and Co. It is noted by the Examiner that the claims are not written in closed language, such that the presence of additional elements (e.g., Fe) in a layer does not defeat the claim.

As recited in claim 4, Hasegawa et al show that the pinned layer closest to the seed layer structure includes CoFe (“ $\text{Co}_{90\text{at}\%}\text{Fe}_{10\text{at}\%}$ ”, see ¶ 0259).

As recited in claim 5, Hasegawa et al show that the AP pinned layers are both constructed of Co. It is noted by the Examiner that the claims are not written in closed language, such that the presence of additional elements (e.g., Fe) in a layer does not defeat the claim.

As recited in claim 6, Hasegawa et al show that the AP pinned layers are both constructed of CoFe (“ $[\text{Co}_{90\text{at}\%}\text{Fe}_{10\text{at}\%}(15)/\text{Ru}(9)/\text{Co}_{90\text{at}\%}\text{Fe}_{10\text{at}\%}(22)]$ ”, see ¶ 0259).

Regarding claims 7-8: The product by process limitations in these claims (e.g. “selected”) are directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessman*,

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180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process limitations or steps, which must be determined in a “product by process” claim, and not the patentability of the process limitations. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

As recited in claim 9, Hasegawa et al are silent regarding whether the head has at least a 10% stronger GMR signal over a head having a substantially similar structure except for the seed layers; however, this limitation is presumed inherent due to the presence in the reference of the claimed structure.

As recited in claim 10, Hasegawa et al are silent regarding whether the head has at least a 10% stronger GMR signal over a head having a substantially similar structure except for materials used to form the pinned layers; however, this limitation is presumed inherent due to the presence in the reference of the claimed structure.

As recited in claim 11, Hasegawa et al show that the head forms part of a GMR head (see Figs. 3 and 13 for examples of GMR head structures).

As recited in claim 12, Hasegawa et al show that the head forms part of a CIP GMR head (see locations of electrodes 8).

As recited in claim 13, Hasegawa et al show a magnetic head (see above for claim 1), comprising: a seed layer structure comprising  $\text{Al}_2\text{O}_3$ , Ta, and NiFeCr seed layers; an antiparallel

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(AP) pinned layer structure formed above the NiFeCr seed layer, wherein the AP pinned layers are constructed of CoFe and Co (see above for claim 3), wherein the pinned layer closest to the seed layer structure includes CoFe; and a free layer positioned above the AP pinned layer structure.

Regarding claim 14: See above for claim 9.

Regarding claim 15: See above for claim 10.

Regarding claim 16: See above for claim 11.

As recited in claim 17, Hasegawa et al show a magnetic head comprising a seed layer structure comprising  $\text{Al}_2\text{O}_3$ , Ta, and NiFeCr seed layers (see above for claim 1); an antiparallel (AP) pinned layer structure formed above the NiFeCr seed layer, wherein the AP pinned layers are constructed of Co and Co (see above for claim 5); and a free layer positioned above the AP pinned layer structure (see above for claim 1).

Regarding claim 18: See above for claim 9.

As recited in claim 19, Hasegawa et al show a magnetic storage system ("hard disk device", see ¶ 0102), comprising: magnetic media ("hard disk", see ¶ 0102); at least one head for reading from and writing to the magnetic media, each head having: a sensor having the structure recited in claim 1 (see teachings above); a write element coupled to the sensor ("write inductive head may be formed on the upper shield layer", see ¶ 0234); a slider ("slider", see ¶ 0102) for supporting the head; and a control unit (inherent to hard disk device) coupled to the head for controlling operation of the head.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. IBM (TDB Dec. 1, 2001, no. 452, p. 2106) teaches the desirability of self-pinned layers insofar as "The elimination of the antiferromagnetic allows thinner Tunnel Valve sensor stack for future short gap heads as well as simplifies the head fabrication." Suabe et al (US Pat. No. 6833981 B2) show a head (see Fig. 10) comprising alumina 2, a Ta layer 3 and a NiFeCr layer 4 (see col. 6, lines 17-24). Kanai (US Pat. No. 5850323) teaches an alumina-coated AlTiC substrate 1, and a Ta film and a nickel iron based alloy film as an underlayer, wherein said nickel iron based alloy film is NiFeCr (see col. 1, line 19-col. 2, line 45).

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

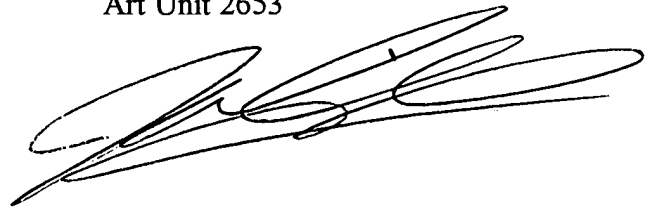
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on Tues. & Thurs. until 9PM, Wed. & Fri. until 5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Julie Anne Watko  
Primary Examiner  
Art Unit 2653

March 17, 2005  
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', is written over the printed name and title.